

REMARKS

1. The rejections for the claims 1-5, 11-30, 33, 35, 37-40, 47-52, 68-70, 74, 76-78 under 35 USC 112, USC 102 and USC 103 and all the references provided by the Examiner have been respectfully studied and considered.
2. All claims (claims 1-78) have been canceled, and three new independent claims 79, 88 and 98 and twenty new dependent claims have been added to better define the invention.
3. Independent claim 79 teaches a new low-cost disposable coffee cartridge which not only enables a beverage brewed under pressure to be discharged directly into a container such as a cup but also converts the beverage into a creamy drink with appealing golden crema therein before discharging the beverage at the cartridge outlet. First of all, crema is a critical attribute for a good cup of espresso and Europe-style coffee, and is currently achieved by expensive coffee machines with complex and difficult-to-use filter holders taught by Muttoni [Pat. No. 4,882,982], Selby [Pat. No. 5,127,328], Schiettecatte [Pat. No. 5,150,645], Cortese [Pat. No. 5,473,973], Cai [Pat. No. 5,638,740], Akkerman [Pat. No. 6,119,582] and Custio [EP 0 682 902]. The disposable cartridge of the present invention brews a coffee drink with the same or better crema without the need of such complex and difficult-to-use filter holder or even without the need of any filter holder at all, thereby significantly simplifying the brewing process for crema-containing coffee drinks. Secondly, because such complex and difficult-to-use filter holders have regions that are not reachable or difficult to reach for cleaning, over a period of usage a stale coffee deposit develops in these regions, which causes stale taste in the brewed coffee and even clogs the filter holder. The innovative but simple structure of the crema generator in the coffee cartridge and the sharing of components between the brewing and crema-generating functions enables the coffee cartridge of the present invention to have very low cost, therefore allowing the cartridge to be disposable after just one use, which resolved these stale coffee taste and clogging problems associated with the existing coffee machines for brewing crema-containing drinks.

Thirdly, existing coffee cartridges taught by Buck [Pat. No. 959,110], Stasse [Pat. No. 3,292,527], Mazza [Pat. No. 3,628,444], Klein [Pat. No. 4,452,130], Seward [Pat. No. 4,452,130] and Louridas [Pat. No. 5,240,772] did not produce and did not intend to produce a crema layer for the brewed beverage. Additionally, Buck, Stasse, Mazza, Klein, Seward and Louridas did not teach the use of a sufficiently high speed jet of drink and a sufficiently small orifice size to form the high speed jet in the cartridge to produce crema as taught by the present invention. To the contrary, Stasse taught the

use of a perforated disc or sieve "capable of retarding the outflow through the orifice 4g" so that a liquid jet could not form at the outlet orifice 4g (please refer to lines 37 to 43 of column 5 and lines 37 to 46 of column 3, Pat. No. 3,292,527). Lastly but not less importantly, the present invention has made the brewing of the traditionally difficult-to-make espresso and European-style coffee drinks, characterized by their appealing golden crema layer, nearly as simple as dispensing water from a spigot, thereby enabling consumers to more readily enjoy the increasingly popular espresso drinks.

To help advance prosecution, some of the support for this claim may be found in Page 8, lines 31-34; Page 9, lines 1-4; Page 11, lines 15-19; Page 12, lines 20-28; and Figs.3a and 3d of the application.

4. Claims 80 - 87 are dependable claims of claim 79.

Claim 80 further teaches how the orifice and collection chamber of the crema generator are formed and connected to the containing chamber, which are shown in Figs.3a, 3d and 5d of the application.

Claim 81 further teaches the formation of the orifice on a flexible plate member. Support for this claim may be found in Page 15, lines 1-8 and Fig. 5d.

Claim 82 further teaches how the containing chamber and the orifice and collection chamber of the crema generator are formed and connected. Support for this claim may be found in Page 14, lines 6-9; Page 15, lines 15-20; Fig. 5b and Fig 6.

Claim 83 further teaches that the crema generator can even generate crema when the cartridge is connected to an in-house plumb system. Support for this claim may be found in Page 10, lines 9-12.

Claim 84 further teaches a solid surface for receiving the high-speed jet. Support for this claim may be found in Page 12, lines 24-28 and Fig. 3d.

Claim 85 further teaches an outlet chamber for maintaining an amount of beverage and receiving the high-speed jet. Support for this claim may be found in Page 11, lines 16-19 and Fig. 3a.

Claim 86 further teaches a second orifice for a second beverage jet to collide the high-speed jet from the orifice. Support for this claim may be found in Page 12, lines 20-24 and Fig. 3d.

Claim 87 describes a way of keeping the flavor-containing materials fresh by maintaining the cartridge outlet opening sealed or closed prior to making or discharging beverage as shown in Figs. 3 and 3b and as shown by Seward [Pat. No. 4,886,674] and Klein [Pat. No. 4,452,130].

5. Independent claim 88 teaches a low-cost bulb-shaped beverage cartridge that not only has a bulb-like

shape with a relatively small cartridge inlet and outlet connected to a bulged, water-impermeable brewing chamber for facilitating both the mounting of the cartridge and the dispensing of the brewed beverage directly into a cup but also has no seam between the brewing chamber and the cartridge inlet and outlet, thereby eliminating the safety risk associated with very hot or boiling water under pressure that may forcefully eject out of a defective seam of a cartridge and cause hot-water burning to the user when brewing a beverage. The seamless bulb-shaped coffee cartridge of the present invention is formed from one single shot or sheet of plastic materials by one of blow-molding and thermal forming processes. First of all, the dire consequence of burning a consumer by the hot or boiling water under pressure ejected from a defective seam of a coffee cartridge demands a zero-defect rate for the seams on the cartridge, which is highly difficult to achieve considering the potentially millions of cartridges that may be consumed at homes each day. More importantly, even an initially perfect seam may develop a crack or defect when the coffee cartridge is filled with nearly boiling water under high pressure to extract the coffee grounds, which is probably one of the most critical problems that prevents wider commercial acceptance of such coffee cartridges. At least partly to address this user safety problem, currently commercially available coffee cartridges, including those taught by Fond et al [Pat. No. 5,656,316] under trade name Nespresso® and by Woolman et al [Pat. No. 4,581,239] under trade name Flavia®, use a cartridge holder to contain the coffee cartridge during the brewing. The need for cartridge holder, however, makes not only the beverage machine more complex and expensive but also makes the operation more difficult and requires frequent cleaning, which diminishes the benefit of disposable coffee cartridges. Being seamless, the bulb-shaped coffee cartridge of the present invention has fundamentally resolved this safety problem.

Secondly, existing coffee cartridges taught by Louridas [Pat. No. 5,240,772], Klein [Pat. No. 4,452,130], Woolman et al [Pat. No. 4,581,239], Stasse [Pat. No. 3,292,527] and Buck [Pat. No. 959,110] required one or more seams that are susceptible to the above-mentioned user safety problem. Buck's coffee cartridge has a threaded seam between the charge holder 14 and a screw cap 15 (please refer to lines 6 to 16 of column 2 and Fig. 1 of Pat. No. 959,110. In the cartridge by Louridas, there has to be a seam between the lower beverage ingredient containing chamber 7 and the water impervious permanent membrane 6 (please refer to lines 51 to 57 of column 2 and Fig. 1 of Pat. No. 5,240,772). In the cartridges by Klein and Stasse, there also has to be a seam between the beverage ingredient containing chamber and the closure or lid for the chamber. Woolman's coffee cartridge requires a peripheral seam for the impermeable sheet material 102 to for a pocket for

ground coffee 112 and a seam between the inlet nozzle 114 and the pocket (please refer to lines 7 to 23 of column 5 and Fig. 1 of Pat. No. 4,581,239).

Thirdly, the bulb shape of the coffee cartridge of the present invention not only provides an highly ergonomic solution for mounting and removing the cartridge from the mounting but also facilitates the blow-molding of the cartridge. Lastly, the seamless configuration of the bulb-shaped coffee cartridge of the present invention has not only resolved the long-known user safety problem with coffee cartridges for brewing under pressure with hot or near-boiling water, but also significantly reduced the cost of the coffee cartridges because the seamless cartridge enables the use of thinner wall, thus less materials, and the elimination of the slow processing step of forming the necessary defect-free seam(s) to form the chamber for the coffee grounds. (Please note that sealing of the barrier film 28 to the cartridge inlet 29 and barrier film 19 to the cartridge outlet 16 is a much simpler and faster operation because these barriers are intended to be removed or broken and do NOT need to withstand the high pressure as the seam(s) must during brewing process.)

To help advance prosecution, some of the support for this claim may be found in Page 6, lines 18-34; Page 8, lines 6-14; Page 9, lines 16-23; and Figs.1 to 3 of the application.

6. Claims 89 - 97 are dependable claims of claim 88.

Claim 89 further teaches how to attach the filter to the unique bulb-shaped containing chamber.

Unlike the cartridges taught by Louridas [Pat. No. 5,240,772], Klein [Pat. No. 4,452,130] and Stasse [Pat. No. 3,292,527] in which the containing chamber has a large top opening for the insertion of the filter and that by Buck [Pat. No. 959,110] in which the filter is sandwiched between the top and bottom part of containing chamber, the seamless bulb-shaped coffee cartridge of the present invention requires the filter to be attached to the chamber from a small cartridge inlet without damaging it. Support for this claim may be found in Page 9, lines 1-4 and 19-21; and Figs. 1-3.

Claim 90 further teaches a spherical or oval shape for the containing chamber, which was found to withstand high pressure without deformation. Support for this claim may be found in Page 8, lines 8-9 and Figs. 1-3.

Claim 91 further teaches a crema generator for the cartridge. Support for this claim may be found in Page 8, lines 31-34; Page 9, lines 1-4; Page 11, lines 15-19; Page 12, lines 20-28; and Figs.3a and 3d of the application.

Claim 92 further teaches a mounting mechanism for the cartridge. Support for this claim may be found in Page 7, lines 7-14 and Figs.1, 2 and 2a of the application.

Claim 93 further teaches a guiding mounting mechanism for the cartridge, which is critical to the safe use of the cartridge because it was found that without such a guiding mechanism, the chance to make an improper seal, thus hot water leakage, between the cartridge inlet and mounting head is unacceptably high. Louridas [Pat. No. 5,240,772], Klein [Pat. No. 4,452,130] and Stasse [Pat. No. 3,292,527] Buck [Pat. No. 959,110] et al. did not teach a cartridge with such guiding means. Support for this claim may be found in Page 6, lines 20-30; Page 7, lines 31-34; and Figs. 1, 2 and 2a of the application.

Claim 94 further teaches a very low-cost safety lock mechanism for the cartridge, which is also critical to the safe use of the cartridge because without it, the hot water would gush out of the cartridge and burn the user if the user try to remove the cartridge while there is still pressure in the cartridge. Louridas [Pat. No. 5,240,772], Klein [Pat. No. 4,452,130] and Stasse [Pat. No. 3,292,527] Buck [Pat. No. 959,110] et al. did not teach a cartridge with such safety means. Support for this claim may be found in Page 7, lines 25-34; and Figs. 1, 2 and 2a of the application.

Claim 95 further teaches to attach a breakable barrier film to inside the cartridge inlet for facilitating the mounting and storage protection. In existing coffee cartridges taught by Louridas [Pat. No. 5,240,772], Klein [Pat. No. 4,452,130] and Stasse [Pat. No. 3,292,527] such cover film is located on the outside of the cartridge inlet. Support for this claim may be found in Page 7, lines 16-24.

Claim 96 further teaches how to use the coffee cartridge with a hand-held mounting head. Support for this claim may be found in Page 10, lines 10-12.

Claim 97 further teaches a plug of porous materials on top of the flavor-containing materials. The porous plug was found critical for the proper function of the cartridge, especially when the flavor-containing materials comprises water-soluble materials. Support for this claim may be found in Page 12, lines 31- 33.

7. Independent claim 98 teaches a new low-cost disposable coffee cartridge which not only enables a beverage brewed under pressure to be discharged directly into a container such as a cup but also converts the beverage into a creamy drink with appealing golden crema. First of all, crema is a critical attribute for a good cup of espresso and Europe-style coffee, and is currently achieved by expensive coffee machines with complex and difficult-to-use filter holders taught by Muttoni [Pat. No. 4,882,982], Selby [Pat. No. 5,127,328], Schiettecatte [Pat. No. 5,150,645], Cortese [Pat. No. 5,473,973], Cai [Pat. No. 5,638,740], Akkerman [Pat. No. 6,119,582] and Custio [EP 0 682 902]. The disposable cartridge of the present invention brews a coffee drink with the same or better crema without the need of such complex and difficult-to-use filter holder or even without the need of any

filter holder at all, thereby significantly simplifying the brewing process for crema-containing coffee drinks. Secondly, because such complex and difficult-to-use filter holders have regions that are not reachable or difficult to reach for cleaning, over a period of usage a stale coffee deposit develops in these regions, which causes stale taste in the brewed coffee and even clogs the filter holder. The innovative but simple structure of the crema generator in the cartridge and the sharing of components between the brewing and crema-generating functions enables the coffee cartridge of the present invention to have very low cost, therefore allowing the cartridge to be disposable after just one use, which resolved these stale coffee taste and clogging problems associated with the existing coffee machines for brewing crema-containing drinks.

Thirdly, existing coffee cartridges taught by Buck [Pat. No. 959,110], Stasse [Pat. No. 3,292,527], Mazza [Pat. No. 3,628,444], Klein [Pat. No. 4,452,130], Seward [Pat. No. 4,452,130] and Louridas [Pat. No. 5,240,772] did not produce and did not intend to produce a crema layer for the brewed beverage. Additionally, Buck, Stasse, Mazza, Klein, Seward and Louridas did not teach the use of a sufficiently high speed jet of drink and a sufficiently small orifice size to form the high speed jet in the cartridge to produce crema as taught by the present invention. To the contrary, Stasse taught the use of a perforated disc or sieve "capable of retarding the outflow through the orifice 4g" so that a liquid jet could not form at the outlet orifice 4g (please refer to lines 37 to 43 of column 5 and lines 37 to 46 of column 3, Pat. No. 3,292,527). Lastly but not less importantly, the present invention has made the brewing of the traditionally difficult-to-make espresso and European-style coffee drinks, characterized by their appealing golden crema layer, nearly as simple as dispensing water from a spigot, thereby enabling consumers to more readily enjoy the increasingly popular espresso drinks.

To help advance prosecution, some of the support for this claim may be found in Page 8, lines 31-34; Page 9, lines 1-4; Page 11, lines 15-19; Page 12, lines 20-28; and Figs. 1, 2, 3a and 3d of the application.

8. Claims 99 - 102 are dependable claims of claim 98.

Claim 99 further teaches the filter to have filtration openings of 0.01 to 0.2 mm to protect the sufficiently small orifice from being clogged. Support for this claim may be found in Page 9, lines 1-4 and in Page 10, lines 31-34.

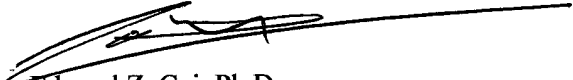
Claim 100 further teaches how the orifice and collection chamber of the crema generator are formed and connected to the containing chamber, which are shown in Figs. 3a, 3d and 5d of the application.

Claim 101 further teaches how the containing chamber and the orifice and collection chamber of the crema generator are formed and connected. Support for this claim may be found in Page 14, lines 6-9; Page 15, lines 15-20; Fig. 5b and Fig 6.

Claim 102 further teaches an chamber for maintaining an amount of beverage and receiving the high-speed jet. Support for this claim may be found in Page 11, lines 16-19 and Fig. 3a.

Please feel free to call me at 360.833.9822 (home) in case you need to contact me for any prosecution needs.

Sincerely yours,



Edward Z. Cai, Ph.D.